

Abstract

An existing diesel engine vehicle of light oil fuel is enabled to run as a diesel engine vehicle using DME as fuel without exchanging a whole diesel engine and at very low cost and easily. The shape of a tip part 21 of a needle valve 2 is set by a center diameter L3 for regulating a minimum flow path area at full lift of a fuel injection nozzle 1, a seat diameter L2 of a seat part 211 coming in contact with a valve seat part 33 and blocking communication with a fuel injection hole 31, and a shaft diameter L1, and a tip end angle is about 92 degrees. The center diameter L3 is set to $\phi 2.5$ mm, the seat diameter L2 is set to $\phi 3.0$ mm, and the shaft diameter L1 is set to $\phi 3.25$ mm. The ratio of the center diameter L3 and the seat diameter L2 is $L3/L2 = 2.5 \text{ mm}/3.0 \text{ mm} = \text{about } 0.833$, and the ratio of the seat diameter L2 and the shaft diameter L1 is $L2/L1 = 3.0 \text{ mm}/3.25 \text{ mm} = \text{about } 0.92$.